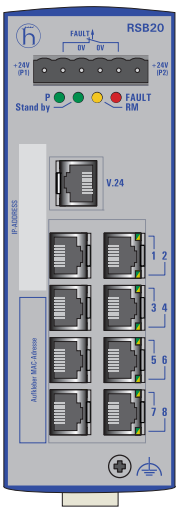
HIRSCHMANN
A BELDEN BRAND

User Manual

Installation
Industrial ETHERNET Rail Basic Switch
RSB20 Family



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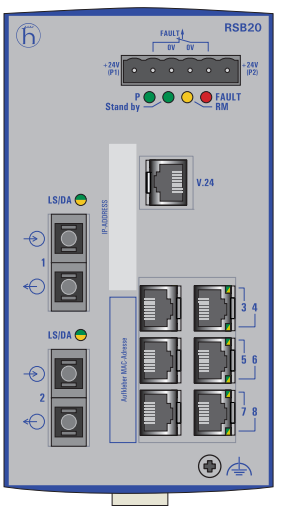

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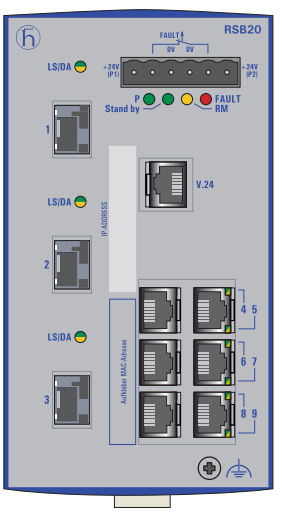

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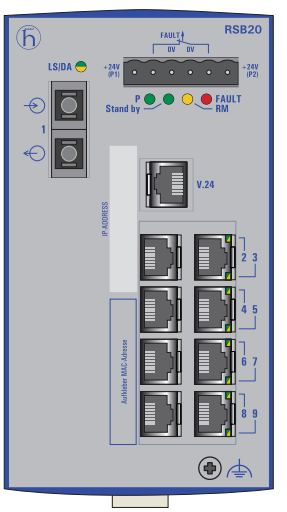

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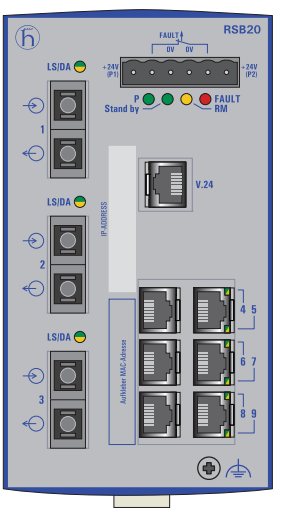

RSB20-0900MMM2

03972900113110900

RSB20
Release 13 11/09

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You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann-ac.de).

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Safety instructions

Notes on safety

This manual contains instructions to be observed for ensuring your personal safety and for preventing damage. The warnings appear next to a warning triangle with a different heading depending on the degree of danger posed:

Danger!
Means that death, serious physical injury or significant damage to property **will occur** if the corresponding safety measures are not carried out.

Warning!
Means that death, serious physical injury or significant damage to property **could occur** if the corresponding safety measures are not carried out.

Caution!
Means that minor physical injury or damage to property can occur if the required safety measures are not carried out.

Note: Contains important information on the product, on how to manage the product, or on the respective section of the documentation to which your special attention is being drawn.

Certified usage

Please observe the following: The device may only be employed for the purposes described in the catalog and technical description, and only in conjunction with external devices and components recommended or approved by the manufacturer. The product can only be operated correctly and safely if it is transported, stored, installed and assembled properly and correctly. Furthermore, it must be operated and serviced carefully.

Supply voltage

For safety reasons the devices have been designed to operate at low voltages. Thus, they may only be connected to the supply voltage connections and to the signal contact with SELV circuits with the voltage restrictions in accordance with IEC/EN 60950-1. The supply voltage is electrically isolated from the housing.
The supply voltage is electrically isolated from the housing.
☐ Use only undamaged parts.

☐ Relevant for North America: For use in Class 2 circuits.
The device may only be connected to a supply voltage of class 2 that fulfills the requirements of the National Electrical Code, Table 11(b). If the voltage is being supplied redundantly (two different voltage sources), the combined supply voltages must fulfill the requirements of the National Electrical Code, Table 11(b).

☐ Relevant for North America: For use in Class 2 circuits.
Only use copper wire/conductors of class 1, 75 °C.

☐ Relevant for North America
for devices certified for hazardous locations:
Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods [Article 501-4(b) of the National Electrical Code, NFPA 70] and in accordance with the authority having jurisdiction.

☐ The device does not contain any service components. Internal fuses are only triggered if there is a fault in the device. If the device is not functioning correctly, or if it is damaged, switch off the voltage supply and return the device to the plant for inspection.

☐ Only switch on the supply voltage to the device if
- the housing is closed,
- the terminal blocks are wired up correctly and
- the terminal blocks are connected.

Shielding ground

Note: The shielding ground of the connectable twisted pair lines is connected to the front panel as a conductor.

☐ Beware of possible short circuits when connecting a cable section with conductive shielding braiding.

Housing

Warning!
Never insert sharp objects (small screwdrivers, wires, etc.) into the inside of the product. There is the risk of an electric shock.

Warning!
When installing the device, make sure the ventilation slots remain free, as otherwise damage can occur through overheating.
Only technicians authorized by Hirschmann are permitted to open the housing.
The housing is grounded via the separate ground screw on the bottom right of the front panel.

☐ The clearance to the ventilation slits of the housing must be at least 10 cm (3.94 in).
☐ The device must be installed in the vertical position.
☐ If installed in a living area or office environment, the device must be operated exclusively in switch cabinets with fire protection characteristics in accordance with EN 60950-1.

Environment

The device may only be operated at the specified ambient temperature (temperature of the ambient air at a distance of up to 5 cm (1.97 in) from the device) and relative air humidity.

☐ Install the device in a location where the climatic threshold values specified in the technical data are adhered to.
☐ Only to be used in an environment with the contamination level specified in the technical data.

Qualification requirements for personnel

Qualified personnel as understood in this manual and the warning signs, are persons who are familiar with the setup, assembly, startup, and operation of this product and are appropriately qualified for their job. This includes, for example, those persons who have been:

- trained or directed or authorized to switch on and off, to ground and to label power circuits and devices or systems in accordance with current safety engineering standards;
- trained or directed in the care and use of appropriate safety equipment in accordance with the current standards of safety engineering;
- trained in providing first aid.

General safety instructions

Electricity is used to operate this equipment. Comply in every detail with the safety requirements specified in the operating instructions regarding the voltages to apply (refer to page 4).

Non-observance of these safety instructions can therefore cause material damage and/or serious injuries.

☐ Only appropriately qualified personnel should work on this device or in its vicinity. These personnel must be thoroughly familiar with all the warnings and maintenance procedures in accordance with this operating manual.
☐ The proper and safe operation of this device depends on proper handling during transport, proper storage and assembly, and conscientious operation and maintenance procedures.
☐ Never start operation with damaged components.
☐ Only use the devices in accordance with this manual. In particular, observe all warnings and safety-related information.

☐ Any work that may be required on the electrical installation may only be carried out by personnel trained for this purpose.

Note:
LED or LASER components in compliance with IEC 60825-1 (2001):
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT

National and international safety regulations

☐ Make sure that the electrical installation meets local or nationally applicable safety regulations.

Note on the CE marking

The devices comply with the regulations contained in the following European directive(s):

2004/108/EG
Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

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The product can be used in living areas (living area, place of business, small business) and in industrial areas.

- Interference immunity: EN 61000-6-2:2005
- Emitted interference: EN 55022:2006 Class A

This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.
The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

FCC note:

Appropriate testing has established that this device fulfills the requirements of a class A digital device in line with part 15 of the FCC regulations.
These requirements are designed to provide sufficient protection against interference when the device is being used in a business environment.
The device creates and uses high frequencies and can radiate same, and if it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a living area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

Recycling note

After usage, this product must be disposed of properly as electronic waste in accordance with the current disposal regulations of your county / state / country.

About this manual

The following manuals are included as PDF files on the enclosed CD ROM:

- User manual “Installation”
- User manual “Basic configuration”
- User manual “Redundancy configuration”
- Reference manual “Web-based Interface” and
- Reference manual “Command Line Interface”

The Network Management Software HiVision/Industrial HiVision provides you with additional options for smooth configuration and monitoring:

- Configuration of multiple devices simultaneously.
- Graphical interface with network layouts.
- Auto-topology discovery.
- Event log.
- Event handling.
- Client / Server structure.
- Browser interface
- ActiveX control for SCADA integration
- SNMP/OPC gateway

Key

The commendations used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

1 Device description

The RSB20 devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The devices allow you to set up switched industrial ETHERNET networks that conform to the IEEE 802.3 and 802.3u standards using copper wires or optical fibers in a line or ring structure.

The devices work without a fan.

The voltage is supplied redundantly.
The devices are mounted very quickly by snapping them onto the DIN rail.

Depending on the device variant, you can choose various media to connect terminal devices and other infrastructure components:
- twisted pair cable
- multimode F/O
- singlemode F/O

The twisted pair ports support:
- Autocrossing
- Autonegotiation
- Autopolarity

There are a number of convenient options for managing the device. Administer your devices via:
- a Web browser
- management software (e.g. HiVision)
- a V.24 interface (locally on the Switch)

The HIPER-Ring redundancy concept enables a quick reconfiguration. With one additional connection, projection remains simple.

Product configuration data can be provided by:
- diagnosis displays
- displaying the operating parameters
- a label area for the IP address

Depending on the software you choose, the devices provide you with a large range of functions:
- Redundancy functions
  - Redundant ring structure
  - HIPER-Ring
  - Redundant power supply
  - Rapid Spanning Tree Protocol (RSTP)
  - Redundant coupling (pending)

- Security
  - Protection from unauthorized access
  - Blocking of unauthorized messages (MAC or IP based)
- Synchronized system time in the network
- Network load control
- Operation diagnosis
- Diagnostics (hardware self-testing)
- Reset
- Priority
- Topology Discovery
- Web-based Interface
- Command Line Interface CLI
- SNMP

The Hirschmann network components help you to establish continuous communication across all levels of the company. Connect your devices to:

- devices of the MICE family
- backbone devices of the MICE family
- the BAT wireless transmission system
- the EAGLE security system
- products for the LION control room / MACH 100 family

1.1 Description of the device variants

The devices differ with regard to the number of interfaces, the media type for connecting segments, and the temperature range.

Device variants with 8 or 9 ports are available. The following table shows the number and type of the ports. In the column for the port type, the abbreviations F/O (optical fiber) and TP (twisted pair) indicate the media type, while the abbreviations DSC and RJ45 indicate the socket type. You can plug an SFP transceiver into the SFP slot in order to obtain an optical port.
MM = Multimode, SM = Singlemode.

Variant	10/100 Mbit/s TP ports		100 Mbit/s F/O ports	
	Num-ber	Connection type	Num-ber	Connection type
RSB20-0800T1T1	8	RJ45 socket	—	—
RSB20-0800M2M2	6	RJ45 socket	2	MM, DSC connector
RSB20-0800S2S2	6	RJ45 socket	2	SM, DSC connector
RSB20-0900ZZZ6	6	RJ45 socket	3	SFP slot
RSB20-0900M2TT	8	RJ45 socket	1	MM, DSC connector
RSB20-0900S2TT	8	RJ45 socket	1	SM, DSC connector
RSB20-0900MMM2	6	RJ45 socket	3	MM, DSC connector
RSB20-0900VVM2	6	RJ45 socket	2 1	SM, DSC connector MM, DSC connector

Table 1: Number and type of ports

The following data applies in a cross-variant manner:

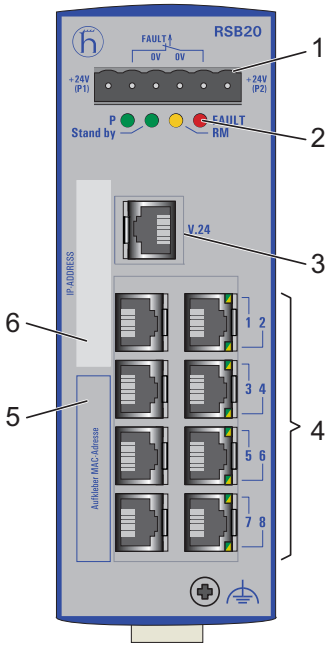
Operating temperature	Standard Extended	0 °C to +60 °C -40 °C to +70 °C
Operating voltage	Standard	9.6 to 32.0 V DC Safety extra-low voltage (SELV), redundant inputs disconnected.
Software variant	Basic	
Configuration	Not preconfigured	
Certifications / declarations	CE. Pending: UL508, ISA 12.12.01 (UL1604).	

The devices comply with the specifications of the standard(s):

- ISO/IEC 8802-03 10BASE-T/100BASE-TX
- ISO/IEC 8802-03 100BASE-FX

1.1.1 Device variants with 8 TP ports

Number of ports and media for RSB20-0800T1T1

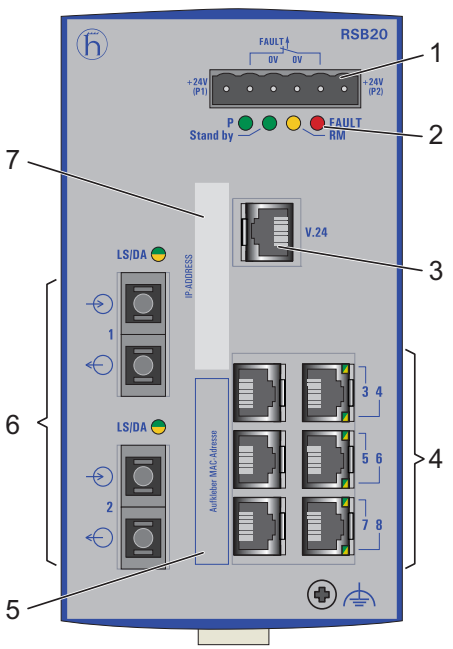


RSB20-0800T1T1...

1	Plug-in terminal block, 6-pin
2	LED display elements
3	V.24 connection for external management
4	8 ports in compliance with 10/100BASE-T(X), RJ45 connections
5	MAC address field
6	IP address field

1.1.2 Device variants with 6 TP and 2 FX ports

Number of ports and media for RSB20-0800M2M2 and RSB20-0800S2S2

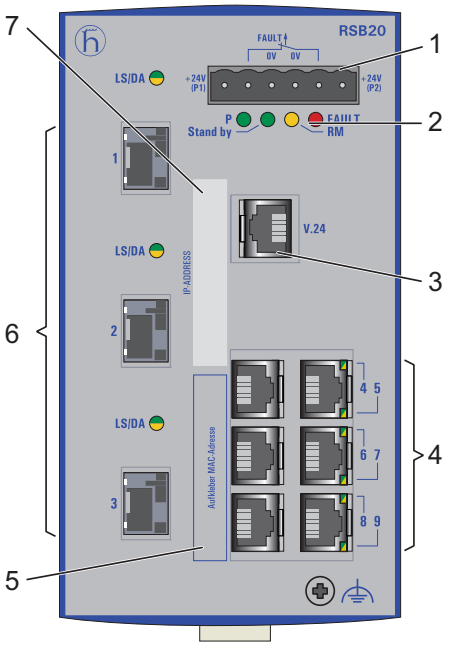


RSB20-0800M2M2

1	Plug-in terminal block, 6-pin
2	LED display elements
3	V.24 connection for external management
4	6 ports in compliance with 10/100BASE-T(X), RJ45 connections
5	MAC address field
6	2 ports in accordance with 100BASE-FX, DSC connections - In RSB20-0800M2M2: Multimode - In RSB20-0800S2S2: Singlemode
7	IP address field

1.1.3 Device variants with 6 TP ports and 3 SFP slots

Number of ports and media for RSB20-0900ZZZ6



RSB20-0900ZZZ6S

1	Plug-in terminal block, 6-pin
2	LED display elements
3	V.24 connection for external management
4	6 ports in compliance with 10/100BASE-T(X), RJ45 connections
5	MAC address field
6	3 SFP slots 100 Mbit/s
7	IP address field

SFP modules

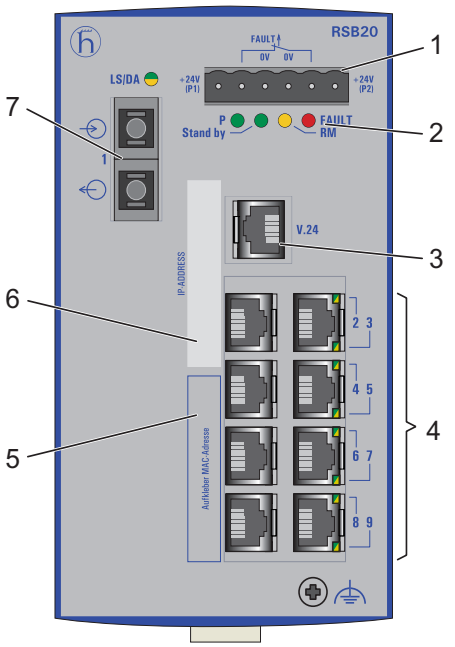
SFP modules are optical transceivers (Fast ETHERNET SFP modules, see page 29). SFP stands for Small Form-factor Pluggable and is also frequently referred to as mini-GBIC (GigaBit Interface Converter).
The SFP modules are plugged into the SFP slots of the device in order to obtain an F/O port. The device has 3 slots for inserting SFP modules (100 Mbit/s).

For information on expanding the network by using SFP modules, see chapter „Network range“ in table 8 and table 9.

Note: Only use Hirschmann SFP modules (see page 29 „Accessories“).

1.1.4 Device variants with 8 TP ports and 1 FX port

Number of ports and media for RSB20-0900M2TT and RSB20-0900S2TT

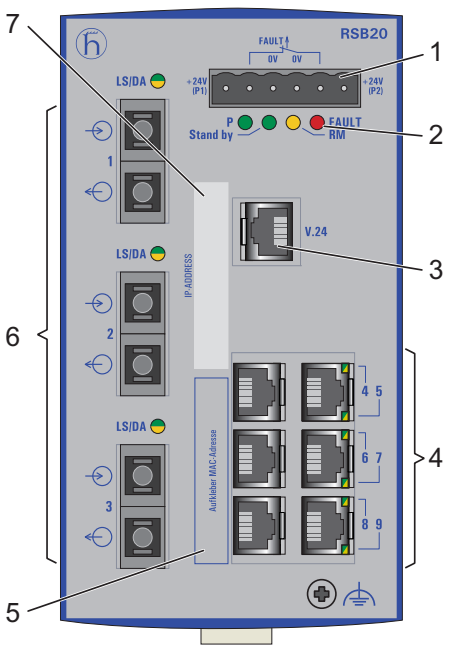


RSB20-0900M2TT

1	Plug-in terminal block, 6-pin
2	LED display elements
3	V.24 connection for external management
4	8 ports in compliance with 10/100BASE-T(X), RJ45 connections
5	MAC address field
6	IP address field
7	One ports in accordance with 100BASE-FX, DSC connection - In RSB20-0900M2TT: Multimode - In RSB20-0900S2TT: Singlemode

1.1.5 Device variants with 6 TP ports and 3 FX ports

Number of ports and media for RSB20-0900MMM2 and RSB20-0900VVM2



RSB20-0900MMM2

1	Plug-in terminal block, 6-pin
2	LED display elements
3	V.24 connection for external management
4	6 ports in compliance with 10/100BASE-T(X), RJ45 connections
5	MAC address field
6	3 ports in accordance with 100BASE-FX, DSC connections - In RSB20-0900MMM2: 3 x Multimode - In RSB20-0900VVM2: 2 x Singlemode and 1 x Multimode
7	IP address field

2 Assembly and start-up

The devices have been developed for practical application in a harsh industrial environment. The installation process is correspondingly simple.
On delivery, the device is ready for operation.

The following thematic sequence has proven itself in practice:

- Unpacking and checking
- Insert data in label area
- Connect the terminal block for voltage supply and signal contact and connect the supply voltage
- Install the device on the DIN rail hub, grounding
- Install the terminal block, start-up procedure
- Installing the data lines

2.1 Installing the device

2.1.1 Unpacking and checking

☐ Check whether the contents of the package are complete (see page 28 „Scope of delivery“).
☐ Check the individual parts for transport damage.

2.1.2 Installing the SFP modules (if present)

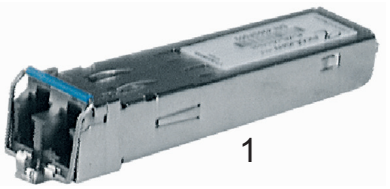


Figure 1: 1 - Fast ETHERNET fiber optic SFP module

☐ To attach an SFP module, first remove the protective cap over the socket.
☐ Push the SFP module with the lock closed into the socket until it latches audibly in place.

Note: Only use Hirschmann SFP modules (see page 29 „Accessories“).

2.1.3 Insert data in label area

The information field for the IP address on the front of the device helps you to structure your network installation clearly.

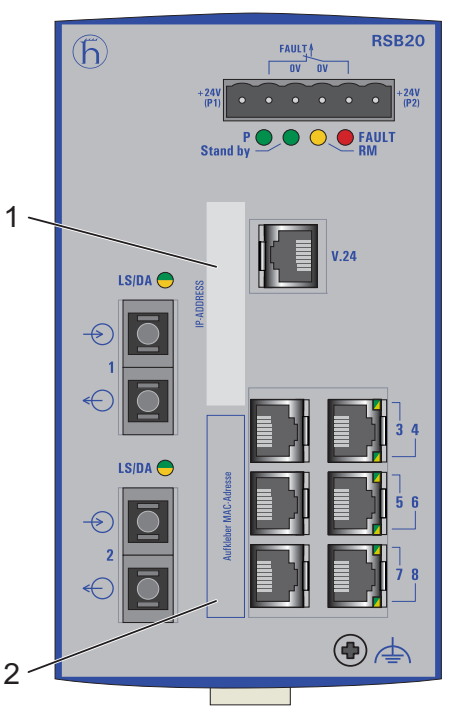
Label area for IP address of device	
	1 IP address of device (label area)
	2 MAC address of device (label)

Table 2: Label area for the IP address of the device

2.1.4 Connecting the terminal blocks for supply voltage and signal contact

The supply voltage and the signal contact are connected via a 6-pin terminal block with a snap lock.

Caution!
Note the safety instructions (see on page 4) and only connect a supply voltage that corresponds to the type plate of your device. Make sure that the contact load capability of the signal contact is not exceeded (see page 26 „Technical data“).

Supply voltage

The supply voltage can be connected redundantly. Both inputs are uncoupled. There is no distributed load. With redundant supply, the power supply unit supplies the device alone with the higher output voltage. The supply voltage is electrically isolated from the housing.
See “Insulation voltage” in chapter „Technical data“ on page 26.

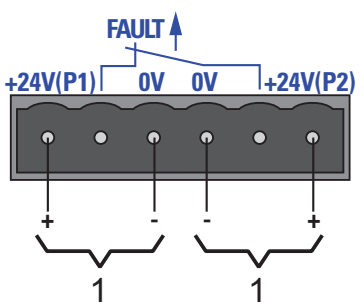
Connecting the supply voltage at the 6-pin terminal block	
	1 DC voltage Nominal voltage range: 12 to 24 V DC Max. voltage range: min. 9.6 to max. 32 V DC

Table 3:

Note: With non-redundant supply of the main voltage, the device reports a loss of power. You can avert this message by applying the supply voltage via both inputs, or by changing the configuration in the Management.

„FAULT“ signal contact

- The signal contact (“FAULT”, for pin assignment of terminal block, see table 3) monitors the functioning of the device, thus enabling remote diagnostics. You can specify the type of function monitoring in the Management.
- You can also use the switch Web page to switch the signal contact manually and thus control external devices.

A break in contact is used to report the following conditions via the potential-free signal contact (relay contact, closed circuit):

- The detected inoperability of at least one of the two voltage supplies (voltage supply 1 or 2 is below the threshold value).
- A continuous malfunction in the device.
- The loss of connection at at least one port. The report of the link status can be masked by the Management for each port. In the delivery state, link status monitoring is deactivated.
- The loss of ring redundancy reserve.
- A detected error during the self-test.
- Incorrect configuration of the HIPER-Ring or ring coupling.

The following condition is also reported in RM mode:

- Ring redundancy reserve is available. On delivery, there is no ring redundancy monitoring.

☐ Pull the terminal block off the device and connect the power supply and signal lines.

2.1.5 Installing the device on the DIN rail hub, grounding

Mounting on the DIN rail

☐ Mount the device on a 35 mm DIN rail in accordance with DIN EN 60175.

☐ Attach the upper snap-in guide of the device into the DIN rail and press it down against the DIN rail until it snaps into place.

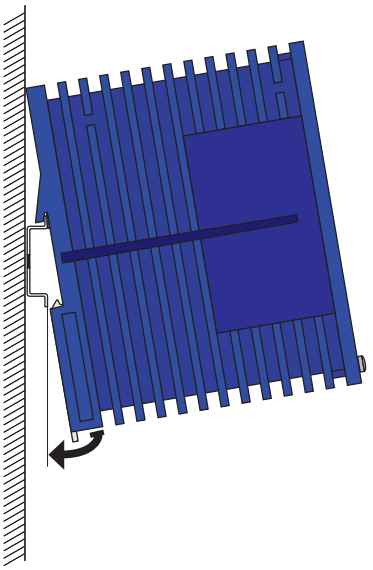


Figure 2: Mounting on the DIN rail

Grounding

The front panel of the device is grounded via the separate ground screw.

2.1.6 Dimension drawings

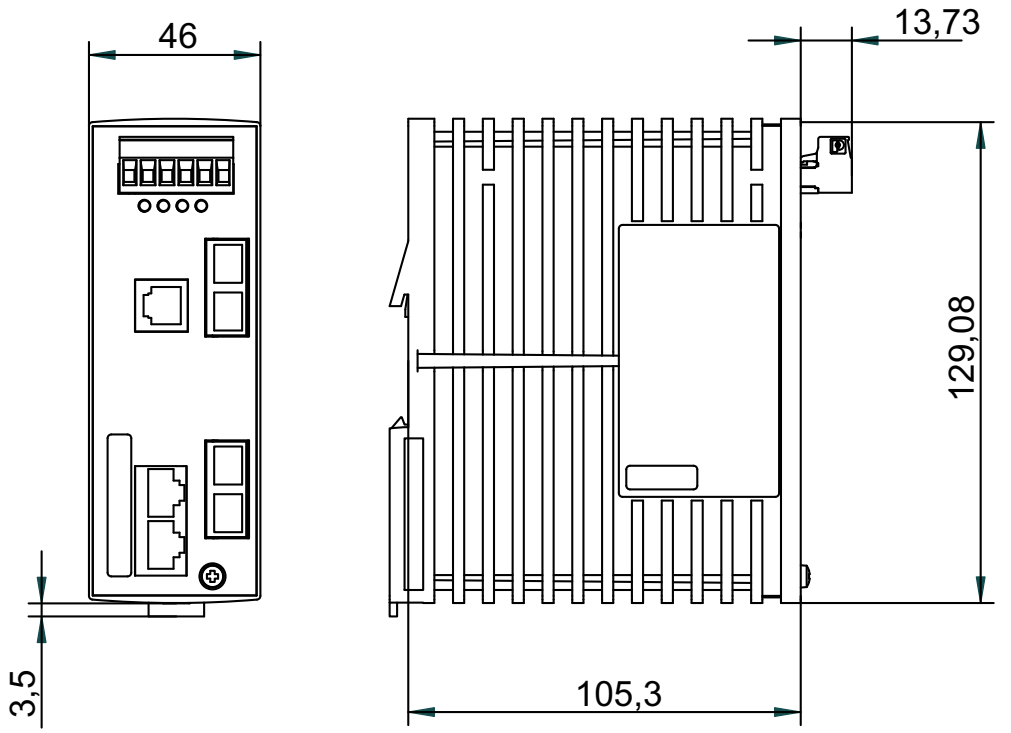


Figure 3: Dimensions of device variants RSB20-0800T1T1

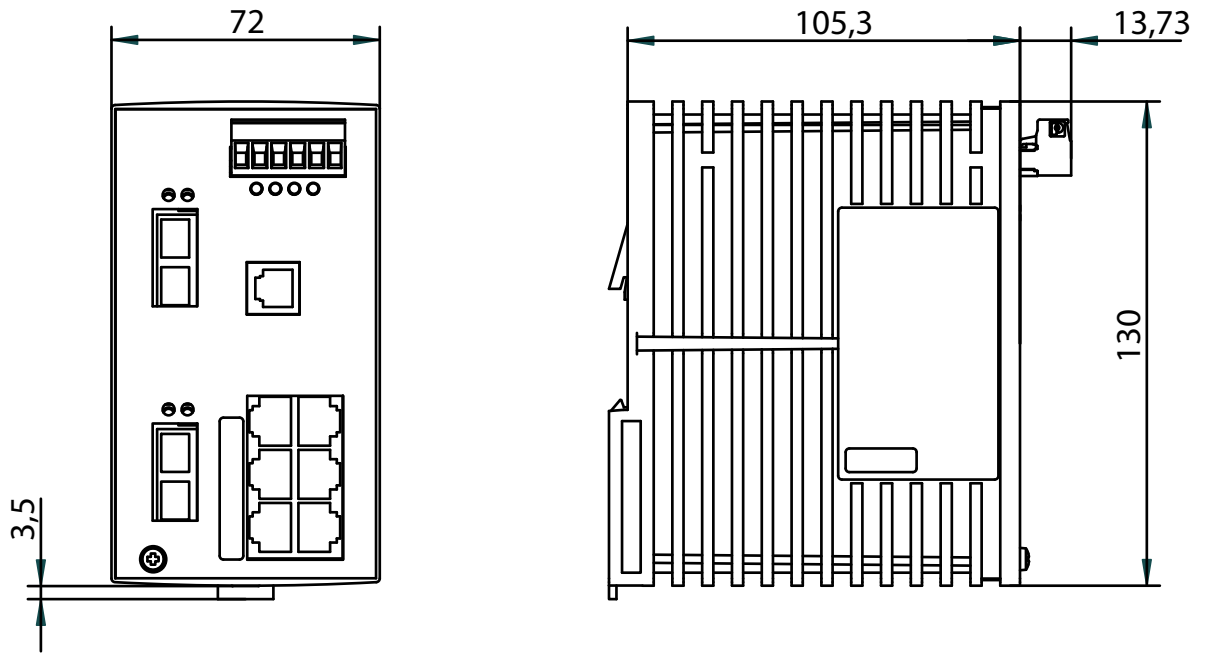


Figure 4: Dimensions of device variants RSB20-0800M2M2, RSB20-0800S2S2 and RSB0900...

2.1.7 Installing the terminal block, start-up procedure

☐ Mount the terminal block for the voltage supply and signal contact on the front of the device using the snap lock. Make sure that the snap lock snaps into place.

By connecting the voltage supply via the terminal block, you start the operation of the device.

2.1.8 Connecting the data lines

You can connect terminal devices and other segments at the ports of the device via twisted pair cables or F/O cables.

☐ Install the data lines according to your requirements.

10/100 Mbit/s twisted pair connection

These connections are RJ45 sockets.
10/100 Mbit/s TP ports enable the connection of terminal devices or independent network segments according to the IEEE 802.3 10BASE-T/ 100BASE-TX standard.
These ports support:

- Autonegotiation
- Autopolarity
- Autocrossing (if autonegotiation is activated)
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode

State on delivery: autonegotiation activated.
The socket housing is electrically connected to the front panel.

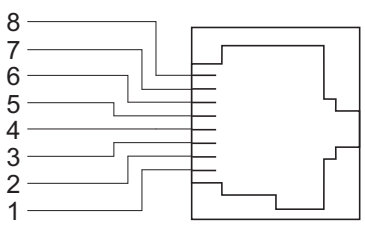
Figure	Pin	Function	
	1	RD+	Receive Data +
	2	RD-	Receive Data -
	3	TD+	Transmit Data +
	6	TD-	Transmit Data -
	4,5,7,8	Not used	

Table 4: Pin assignment of a TP/TX interface in MDI-X mode, RJ45 socket

100 Mbit/s F/O connection

RSB20-0800M2M2, RSB20-0800S2S2, RSB20-0900M2TT, RSB20-0900S2TT, RSB20-0900MMM2, RSB20-0900VVM2:
These connections are DSC connectors.
RSB20-0900ZZZ6
These ports are SFP slots.

100 MBit/s F/O ports enable the connection of terminal devices or independent network segments in compliance with the IEEE 802.3 100BASE-FX standard.
These ports support:

- Full or half duplex mode

State on delivery: full duplex FDX

Note: Make sure that the LH ports are only connected with LH ports, SM ports are only connected with SM ports, and MM ports only with MM ports.

2.2 Display elements

After the operating voltage is set up, the software starts and initializes itself. Afterwards, the device performs a self-test. During this process, various LEDs light up. The process takes around 60 seconds.

Device state

These LEDs provide information about conditions which affect the operation of the whole device.

Figure 5: Device status LEDs

P - Power (green/yellow LED)	
Glowing green	Both supply voltages are on
Glowing yellow	There is only one supply voltage (P1 or P2) on
Not glowing	Supply voltages P1 and P2 are too low
FAULT - error, signal contact (red LED)	
Glowing red	The signal contact is open, i.e. it is reporting an error.
Not glowing	The signal contact is closed, i.e. it is not reporting an error.
RM - Ring Manager (green/yellow LED) [a]	
Glowing green	RM function active, redundant port disabled
Glowing yellow	RM function active, redundant port enabled
Not glowing	RM function not active
Flashing green	Incorrect configuration of the HIPER-Ring (e.g. the ring is not connected to the ring port).

a. If the manual adjustment is active on the “FAULT” signal contact, then the detected error display is independent of the setting of the signal contact.

Stand-by	
Glowing green	Stand-by mode enabled
Not glowing	Stand-by mode not enabled

Port state

The green and yellow LEDs at the individual port display port-related information. During the boot phase, these LEDs are used to display the status of the boot procedure.

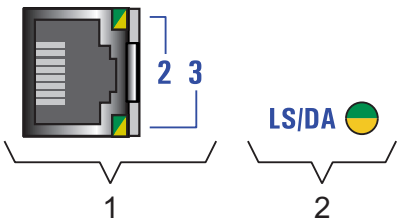
Port status LEDs		
	1	Port status LEDs for RJ45
	2	Port status LEDs for DSC and SFP slot

Table 5:

LS - link status (green LED)	
Not glowing	No valid connection.
Glowing green	Valid connection.
Flashing green (1 time a period)	Port is switched to stand-by.
Flashing green (3 times a period)	Port is switched off.
DA - data (yellow LED)	
Not glowing	No data reception at corresponding port
Flashing yellow	Data reception at corresponding port

2.3 Basic set-up

The IP parameters must be entered when the device is installed for the first time. The device provides the following options for configuring IP addresses:

- Configuration via V.24 connection
- Configuration using the HiDiscovery protocol
- Configuration via BOOTP
- Configuration via DHCP
- Configuration via DHCP Option 82
- Configuration using AutoConfiguration Adapter ACA 11

Further information on the basic settings of the device can be found in the "Basic Configuration" user manual on the CD ROM.

Default settings

- IP address: The device looks for the IP address using DHCP
- Password for management:
  Login: user; password: public (read only)
  Login: admin; password: private (read and write)
- V.24 data rate: 9,600 Baud
- Ethernet ports: link status is not evaluated (signal contact)
- Optical 100 Mbit/s ports: 100 Mbit/s, full duplex
  All other ports: autonegotiation
- RM function (Ring Manager) not activated
- RSTP (Rapid Spanning Tree) activated
- HIPER-Ring not activated
- Stand-by mode not enabled

V.24 interface (external management)

The V.24 interface is an RJ11 socket.
At the V.24 connection, a serial interface is provided for the local connection of an external management station (VT100 terminal or PC with corresponding terminal emulation) or an AutoConfiguration Adapter ACA 11.
This enables you to set up a connection to the Command Line Interface (CLI) and to the system monitor.

VT 100 terminal settings	
Speed	9,600 Baud
Data	8 bit
Stopbit	1 bit
Handshake	off
Parity	none

The socket housing is electrically connected to the front panel of the device.
The V.24 interface is not electrically isolated from the supply voltage.

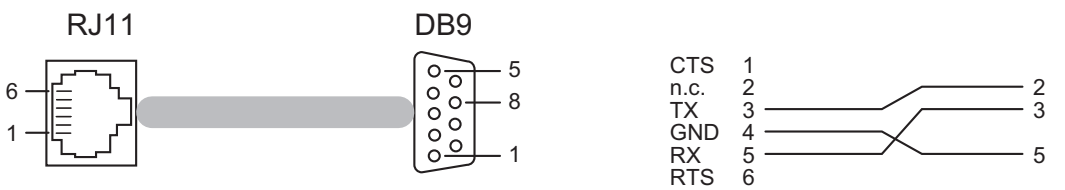


Figure 6: Pin assignment of the V.24 interface and wiring to the DB9 connector

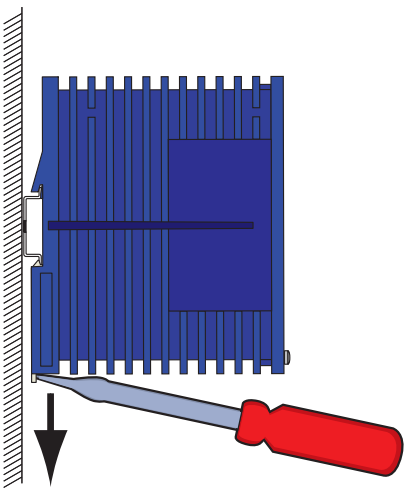
Note: You will find the order number for the terminal cable, which is ordered separately, in the Technical Data chapter (see page 26).

You will find a description of the V.24 interface in the “Basic Configuration User Manual” on the CD-ROM.

2.4 Disassembly

Removing the device from the DIN rail

☐ To take the device off the DIN rail, insert a screwdriver horizontally under the housing into the locking slide, pull it (without tipping the screwdriver) downwards and lift the device upwards.



Disassembling the SFP modules

☐ Pull the module out of the socket by means of the opened lock.

☐ Close the module with the protective cap.

3 Technical data

General technical data

Dimensions W x H x D	RSB20-0800T1T1	47 mm x 131 mm x 111 mm
	RSB20-0800M2M2, RSB20-0800S2S2 and RSB0900...	74 mm x 131 mm x 111 mm
Weight	RSB20-0800T1T1	400 g
	RSB20-0800M2M2, RSB20-0800S2S2 and RSB0900...	410 g
Power supply	Operating voltage Rated voltage range DC Max. voltage range DC	 12 to 24 V DC min. 9.6 to max. 32 V DC Safety extra-low voltage (SELV), redundant inputs disconnected. Relevant for North America: Nec Class 2 power source max. 5A.
Overload current protection at input		Non-replaceable fuse
Insulation voltage between operating voltage connections and housing		800 V DC Protective elements limit the insulation voltage to 45 V DC (1mA)
"FAULT" signal contact	Switching current	max. 1 A, SELV
	Switching voltage	max. 60 V DC or max. 30 V AC, SELV
Environment	Storage temperature (ambient air)	Standard: -40 °C to +70 °C Extended: -40 °C to +85 °C
	Humidity	10% to 95% (non-condensing)
	Air pressure	Up to 2000 m (795 hPa), higher altitudes on request
Operating temperature	Standard	0 °C to +60 °C
	Extended	-40 °C to +70 °C
Contamination level		2
Protection classes	Laser protection	Class 1 according to EN 60825-1 (2001)
	Protection class	IP 20

EMC and immunity

EMC interference immunity		
IEC/EN 61000-4-2	Electrostatic discharge	
	Contact discharge Air discharge	4 kV 8 kV
IEC/EN 61000-4-3	Electromagnetic field	
	80 - 2,000 MHz	10 V/m
IEC/EN 61000-4-4	Fast transients (burst)	
	Power line Data line	2 kV 1 kV

EMC interference immunity		
IEC/EN 61000-4-5	Voltage surges	
	Power line, line / line	0.5 kV
	Power line, line / earth	1 kV
	Data line	1 kV
IEC/EN 61000-4-6	Line-conducted interference voltages	
	10 kHz - 150 kHz	3 V
	150 kHz - 80 MHz	10 V
EMC emitted interference		
EN 55022	Class A	Yes
FCC 47 CFR Part 15	Class A	Yes
Stability		
Vibration	IEC 60068-2-6 Test FC test level according to IEC 61131-2	Yes
Shock	IEC 60068-2-27 Test Ea test level according to IEC 61131-2	Yes

Network range

TP port	
Length of a twisted pair segment	typ. 100 m (cat5e cable with 100BASE-TX)

Table 6: TP port 10BASE-T / 100BASE-TX

Product code		Wave length	Fiber	System attenuation	Expansion	Fiber data
-M2, -MM	MM	1300 nm	50/125 µm	0-8 dB	0-5 km	1.0 dB/km, 800 MHz*km
-M2, -MM	MM	1300 nm	62.5/125 µm	0-11 dB	0-4 km	1.0 dB/km, 500 MHz*km
-S2, -VV	SM	1300 nm	9/125 µm	0-16 dB	0-30 km	0.4 dB/km; 3.5 ps/(nm*km)

Table 7: F/O port 100BASE-FX

Product code M-FAST SFP-...		Wave length	Fiber	System attenuation	Expansion	Fiber data
-MM/LC...	MM	1310 nm	50/125 µm	0-8 dB	0-5 km	1.0 dB/km, 800 MHz*km
-MM/LC...	MM	1310 nm	62.5/125 µm	0-11 dB	0-4 km	1.0 dB/km, 500 MHz*km
-SM/LC...	SM	1310 nm	9/125 µm	0-13 dB	0-25 km	0.4 dB/km; 3.5 ps/(nm*km)
-SM+/ LC...	SM	1310 nm	9/125 µm	10-29 dB	25-65 km	0.4 dB/km; 3.5 ps/(nm*km)
-LH/LC	SM	1550 nm	9/125 µm	10-29 dB	40-104 km	0.25 dB/km; 19 ps/(nm*km)

Table 8: Fiber port 100BASE-FX (SFP fiber optic Fast ETHERNET Transceiver)

MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul

Product code M-FAST-SFP-BIDI...		Wave length TX	Wave length RX	Fiber	System attenua-tion	Expan-sion	Fiber data
Type A SM/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0-14 dB	0-20 km	0.4 dB/km, 3.5 ps/(nm*km)
Type B SM/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0-14 dB	0-20 km	0.25 dB/km, 19 ps/(nm*km)
Type A SM+/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0-27 dB	0-40 km	0.4 dB/km, 3.5 ps/(nm*km)
Type B SM+/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0-17 dB	0-40 km	0.25 dB/km, 19 ps/(nm*km)
Type A LH/LC EEC	LH	1490 nm	1590 nm	9/125 µm	0-29 dB	0-80 km	0.25 dB/km, 19 ps/(nm*km)
Type B LH/LC EEC	LH	1590 nm	1490 nm	9/125 µm	0-29 dB	0-80 km	0.25 dB/km, 19 ps/(nm*km)

Table 9: F/O port (bidirectional Fast ETHERNET SFP Transceiver)

Power consumption/power output

Device name	TX ports	FX ports	Maximum power consumption	Maximum power output
RSB20-0800T1T1	8 x RJ45	— —	6.0 W	20.5 Btu (IT)/h
RSB20-0800M2M2	6 x RJ45	2 x MM, DSC	8.0 W	27.5 Btu (IT)/h
RSB20-0800S2S2	6 x RJ45	2 x SM, DSC	8.0 W	27.5 Btu (IT)/h
RSB20-0900ZZZ6	6 x RJ45	3 x SFP	9.0 W	31.0 Btu (IT)/h
RSB20-0900M2TT	8 x RJ45	1 x MM, DSC	8.0 W	27.5 Btu (IT)/h
RSB20-0900S2TT	8 x RJ45	1 x SM, DSC	8.0 W	27.5 Btu (IT)/h
RSB20-0900MMM2	6 x RJ45	3 x MM, DSC	9.0 W	31.0 Btu (IT)/h
RSB20-0900VVM2	6 x RJ45	2 x SM, DSC 1 x MM, DSC	9.0 W	31.0 Btu (IT)/h

Table 10: Power consumption/power output RSB20-....

Scope of delivery

Device	Scope of delivery
RSB20-...	Device
	Terminal block for supply voltage and signal contact
	Installation user manual and CD-ROM

Order numbers/product description

Name	TX ports	FX ports	Operating temperature	Preconfiguration	Order number
RSB20-0800T1T1	8 x RJ45	— —	0 °C to +60 °C	None	942 014-001
RSB20-0800M2M2	6 x RJ45	2 x MM, DSC	0 °C to +60 °C	None	942 014-002
RSB20-0800S2S2	6 x RJ45	2 x SM, DSC	0 °C to +60 °C	None	942 014-003
RSB20-0900ZZZ6	6 x RJ45	3 x SFP	0 °C to +60 °C	None	942 014-004
RSB20-0900M2TT	8 x RJ45	1 x MM, DSC	0 °C to +60 °C	None	942 014-005
RSB20-0900S2TT	8 x RJ45	1 x SM, DSC	0 °C to +60 °C	None	942 014-006
RSB20-0900MMM2	6 x RJ45	3 x MM, DSC	0 °C to +60 °C	None	942 014-007
RSB20-0900VVM2	6 x RJ45	2 x SM, DSC 1 x MM, DSC	0 °C to +60 °C	None	942 014-008
RSB20-0800T1T1	8 x RJ45	— —	-40 °C to +70 °C	None	942 014-009
RSB20-0800M2M2	6 x RJ45	2 x MM, DSC	-40 °C to +70 °C	None	942 014-010
RSB20-0800S2S2	6 x RJ45	2 x SM, DSC	-40 °C to +70 °C	None	942 014-011
RSB20-0900ZZZ6	6 x RJ45	3 x SFP	-40 °C to +70 °C	None	942 014-012
RSB20-0900M2TT	8 x RJ45	1 x MM, DSC	-40 °C to +70 °C	None	942 014-013
RSB20-0900S2TT	8 x RJ45	1 x SM, DSC	-40 °C to +70 °C	None	942 014-014
RSB20-0900MMM2	6 x RJ45	3 x MM, DSC	-40 °C to +70 °C	None	942 014-015
RSB20-0900VVM2	6 x RJ45	2 x SM, DSC 1 x MM, DSC	-40 °C to +70 °C	None	942 014-016

Table 11: Operating temperature and order numbers

Accessories

Name	Operating temperature (chassis)	Order number
6-pin terminal block (50 pcs.)		943 845-006
AutoConfiguration Adapter ACA 11		943 751-001
HiVision Network Management software		943 471-100
OPC Server software HiOPC		943 055-001
Pocket Guide		280 710-851
Rail Power Supply RPS 30		943 662-003
Rail Power Supply RPS 80 EEC		943 662-080
Rail Power Supply RPS 120 EEC		943 662-120
Terminal cable		943 301-001
Fast ETHERNET SFP Transceiver		
M-FAST SFP-MM/LC	0 °C to +60 °C	943 865-001
M-FAST SFP-MM / LC EEC	-40 °C to +85 °C	943 945-001
M-FAST SFP-SM/LC	0 °C to +60 °C	943 866-001
M-FAST SFP-SM / LC EEC	-40 °C to +85 °C	943 946-001
M-FAST SFP-SM+/LC	0 °C to +60 °C	943 867-001
M-FAST SFP-SM+/ LC EEC	-40 °C to +85 °C	943 947-001
M-FAST SFP-LH/LC	0 °C to +60 °C	943 868-001
Bidirectional Fast ETHERNET SFP Transceiver		
M-FAST-SFP-BIDI Type A SM/LC EEC	-40 °C to +85 °C	942 009-001

Name	Operating temperature (chassis)	Order number
M-FAST-SFP-BIDI Type B SM/LC EEC	-40 °C to +85 °C	942 009-002
M-FAST-SFP-BIDI Type A SM+/LC EEC	-40 °C to +85 °C	942 010-001
M-FAST-SFP-BIDI Type B SM+/LC EEC	-40 °C to +85 °C	942 010-002
M-FAST-SFP-BIDI Type A LH/LC EEC	-40 °C to +85 °C	942 011-001
M-FAST-SFP-BIDI Type B LH/LC EEC	-40 °C to +85 °C	942 011-002
M-FAST-SFP-BIDI Bundle SM/LC EEC (Type A + B)	-40 °C to +85 °C	942 009-101
M-FAST-SFP-BIDI Bundle SM+/LC EEC (Type A + B)	-40 °C to +85 °C	942 010-101
M-FAST-SFP-BIDI Bundle LH/LC EEC (Type A + B)	-40 °C to +85 °C	942 011-101

Underlying norms and standards

Name	
cUL 508:1998	Safety for Industrial Control Equipment
EN 55022:2006	IT equipment – radio interference characteristics
EN 60079-15	Electrical equipment for explosive gas atmospheres – part 15: Construction, testing and marking of protection type "n" electrical apparatus.
EN 61000-6-2:2005	Generic norm – immunity in industrial environments
EN 61131-2:2003	Programmable logic controllers
FCC 47 CFR Part 15:2006	Code of Federal Regulations
IEC/EN 60950-1:2006	Safety for the installation of IT equipment
IEEE 802.1 D	Switching, GARP, GMRP, Spanning Tree
IEEE 802.1 D-1998	Media access control (MAC) bridges (includes IEEE 802.1p Priority and Dynamic Multicast Filtering, GARP, GMRP)
IEEE 802.3-2002	Ethernet
ISA 12.12.01 (cUL 1604), CSA C22.2 No. 213	Electrical Equipment for Use in Class I and Class II, Div.2 and Class III Hazardous (Classified) Locations

Table 12: List of norms and standards. Certified devices are marked with a certification indicator. From the imprint on the device label you will see the current certification status of your device.

Certifications

Standard	RSB20-...
cUL 508 / CSA C22.2 No.142	pending
ISA 12.12.01 / CSA C22.2 No.213	pending

Table 13: Certifications - for the current status, visit www.hirschmann.com

A Further support

Technical questions and training courses

In the event of technical queries, please contact your local Hirschmann distributor or Hirschmann office.
You can find the addresses of our distributors on the Internet:
www.hirschmann-ac.com.

Our support line is also at your disposal:

- Tel. +49 1805 14-1538
- Fax +49 7127 14-1551

Answers to Frequently Asked Questions can be found on the Hirschmann internet site (www.hirschmann-ac.com) at the end of the product sites in the FAQ category.
The current training courses to technology and products can be found under http://www.hicomcenter.com.

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